

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:)	
)	
Imtiaz RANGWALLA)	Group Art Unit: 1774
)	
Application No.: 10/823,920)	Examiner: B. Shewareged
)	
Filed: April 14, 2004)	Confirmation No.: 6117
)	
For: MATERIALS TREATABLE BY PARTICLE)	
BEAM PROCESSING APPARATUS)	
)	
)	

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

In support of the Notice of Appeal filed January 25, 2007, in response to the Notice of Panel Decision from Pre-Appeal Brief Review mailed March 9, 2007, and pursuant to 37 C.F.R. § 41.37, the period for reply having been extended two (2) months to June 9, 2007, by the petition and fee filed concurrently herewith, Appellant presents this brief and the required fee of \$950.00, including the \$500.00 required under 37 C.F.R. § 41.20(b)(2) and \$450.00 for the two (2) month extension of time.

This Appeal is in response to the final Office Action dated August 25, 2006, rejecting claims 1-13, 15-26 and 38-43, all of which are set forth in the attached Claims Appendix.

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I. Real Party In Interest

Energy Sciences, Inc. is the assignee of record and real party in interest as evidenced by the assignment recorded May 4, 2005, at Reel No. 016188, Frame No. 0880.

II. Related Appeals and Interferences

Appellant, Appellant's undersigned legal representative, and the assignee are not aware of any appeals, interferences, or other proceedings that would directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1-13 and 15-43 are pending. Claim 14 has been cancelled. Claims 27-37 have been withdrawn. The Examiner has rejected claims 1-13, 15-26 and 38-43 under 35 U.S.C. § 103(a). Appellant appeals the Examiner's decision on all of the rejected claims. As argued below, Appellant believes that the rejected claims are allowable on the record before the Board.

IV. Status of Amendments

All amendments have been entered, and no amendments have been made subsequent to the issuance of the final Office Action dated August 25, 2006.

V. Summary of Claimed Subject Matter

The present application relates generally to a layered material comprising a substrate, an ink formulation on a portion of the substrate, and a lacquer on at least a part of the ink formulation, where the ink formulation and lacquer are selected to permit at least some bonding to each other.

Electron beam (EB) processing devices have been used to modify the molecular structure of specially-designed liquid coatings, inks, and adhesives. *Specification* at 1, ¶ [003]. These modifications include the breaking of bonds and the formation of charged particles and free radicals, which can cause polymerization to occur. *Id.* Low voltage EB processing is especially useful in the treatment of coatings, inks, and laminating adhesives for flexible food packaging. *Id.* at 2, ¶ [006].

In particular, EB processing has been used to cure overprint varnishes on conventional solvent or water-based inks. *Id.* at 2, ¶ [007]. However, this method typically results in poor adhesion between the varnish layer and the ink layer. *Id.* In addition, the ink itself lacks cohesiveness and can split or delaminate from its substrate. *Id.*

Appellant has now discovered that layered materials which exhibit improved adhesion characteristics can be obtained by using an ink formulation and a lacquer that each comprise at least one monomer capable of free radical and/or cationic polymerization. *Id.* at 7, ¶ [024]. EB-curing of the ink and lacquer results in the ink being cohesive and/or integrated with the lacquer, resulting in good adhesion between the ink and lacquer of the layered product. *Id.*

The claimed invention (independent claim 38) relates to a layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer curable by free radical and/or cationic polymerization; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one monomer curable by free radical and/or cationic polymerization, wherein at least a portion of the ink formulation and at least a portion of the lacquer are selected to permit at least some bonding to each other. *Id.* at 6, ¶¶ [019] and [021].

The claimed invention (independent claim 1) further relates to the layered material claimed above, wherein the ink formulation and lacquer comprise at least one monomer independently selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols. *Id.* at 6, ¶ [020].

The claimed invention (independent claim 20) also relates to a layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one first polymer; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one second polymer, wherein at least a portion of the at least one first polymer is bonded to at least a portion of the at least one second polymer. *Id.* at 7-8, ¶¶ [025] - [026].

The claimed invention (independent claim 13) further relates to the layered material claimed above, wherein said first and second polymers are each independently derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols. *Id.* at 4, ¶¶ [011] - [012].

Finally, the claimed invention (independent claim 27; withdrawn) also relates to a method for making a layered material, comprising:

providing a substrate;

applying an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

applying at least a portion of the ink formulation with a lacquer, the lacquer comprising at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols. *Id.* at 4-5, ¶ [013].

VI. Grounds of Rejection to be Reviewed

The ground of rejection to be reviewed on appeal is the following:

1. Claims 1-13, 15-26 and 38-43 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Publication No. 2003/0001108 A1 ("Rangwalla") in view of U.S. Patent No. 5,382,282 ("Pennaz").

Each claim of this application is separately patentable and upon issuance of a patent each claim will be entitled to a separate presumption of validity under 35 U.S.C. § 282. For convenience in the handling of this appeal, however, the claims will be grouped according to the single rejection given and argued under the same subheadings in accord with 37 C.F.R. § 41.37(c)(1)(vii).

VII. Argument

Claims 1-13, 15-26 and 38-43 stand rejected under 35 U.S.C. § 103(a) over the combination of Rangwalla and Pennaz. Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness for these rejections. The combination of Rangwalla and Pennaz fails to teach or suggest each and every limitation of the claimed invention. Specifically, the Examiner relies on inherency for the admittedly absent teaching from Rangwalla and Pennaz of the recited bonding limitation between at least a portion of the ink formulation and lacquer, to support a *prima facie* case of obviousness.¹ However, the Examiner has refused to provide any evidence or reasoning tending to show the inherent presence of this limitation in the prior-art references separately or in combination. Instead, the Examiner has improperly shifted the burden to require the Applicant to prove that the alleged inherency is not necessarily and always present in Rangwalla and Pennaz separately or in combination.

A. **The Burden of Establishing a *Prima Facie* Case of Obviousness Initially Falls Squarely on the Examiner**

In making a rejection under 35 U.S.C. § 103, the Examiner bears the initial burden to establish a *prima facie* case of obviousness. *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter.); *see also* M.P.E.P. § 2142. To meet this burden, the Examiner must point to some “need or problem known in the field of endeavor at the time of the invention and addressed by the patent” that would have provided a person of ordinary skill in the art a “reason for combining the elements in the manner claimed.”

¹ The term “bonding” as used herein in the claim context, unless stated otherwise, is shorthand and is a reference to the more specific language recited in each claim regarding bonding of the ink formulation and the lacquer. For example, claim 1 recites “wherein at least a portion of said ink formulation and at least a portion of said lacquer are selected to permit at least some bonding to each other.”

KSR Int'l Co. v. Teleflex Inc., 550 U.S. ___, slip op. at 16 (April 30, 2007). “[A] design need or market pressure to solve a problem” may provide the requisite motivation to combine the claimed elements if a person of ordinary skill pursues a predictable solution that eventually leads to the anticipated success. *Id.* at 17.

In addition, the Examiner must show that the prior art references teach or suggest all the claim limitations. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Thus, assuming, arguendo, that the Examiner has correctly concluded that one of ordinary skill in the art would have seen a benefit in combining the prior art references, a rejection under 35 U.S.C § 103 will fail if the Examiner has not established the presence of each and every claim limitation. *See, e.g., Ex parte Levy*, 17 U.S.P.Q.2d 1461 (Bd. Pat App. & Inter. 1990). That is precisely the issue before the Board on this appeal. As argued below, the Examiner has failed to present a prima facie case of obviousness of the claims over Rangwalla and Pennaz because he has failed to show that Rangwalla and Pennaz or their combination inherently teach the recited “bonding” limitation of all the claims.

B. The Examiner Has Failed to Identify a Reason for Combining the Teachings of Rangwalla and Pennaz

Several basic factual inquiries must be made in order to determine the obviousness or non-obviousness of a claim under 35 U.S.C. § 103. These factual inquiries, set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), require the Examiner to:

- (1) Determine the scope and content of the prior art;
- (2) Ascertain the differences between the prior art and the claims in issue;
- (3) Resolve the level of ordinary skill in the pertinent art; and

(4) Evaluate evidence of secondary considerations.

The obviousness or non-obviousness of the claimed invention is then evaluated in view of the results of these inquiries. *Graham*, 383 U.S. at 17-18; *see also KSR Int'l Co.*, slip op. at 2.

Thus, in order to satisfy the initial burden of establishing a prima facie case of obviousness, the Examiner must first show that there is some suggestion or motivation, either in the references or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the references. *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998). The Supreme Court, in the recent *KSR* decision, recognized that a “teaching, suggestion, or motivation” could provide helpful insight in determining whether the claimed subject matter is obvious under Section 103(a). *KSR Int'l Co.*, slip op. at 14.

In addition, the Supreme Court mandates that “[t]o facilitate review, this analysis [of whether there was an apparent reason to combine the known elements in the manner claimed] should be made explicit.” *Id.*, citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”).

Following the *KSR* decision, the Office issued a memorandum to its technology center directors on May 3, 2007, indicating that **“in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.”** (Emphasis in original).

In the present case, a *prima facie* case of obviousness has not been established for claims 1-13, 15-26 and 38-43, because the Examiner has failed to provide any explicit reasoning to modify or combine the teachings of Rangwalla and Pennaz in an attempt to arrive at the claimed invention

The Examiner alleges that Rangwalla discloses a packaging material comprising a substrate, a lacquer coating on the substrate and an ink print layer between the lacquer coating and the substrate. *Final Office Action* at 2-3. The Examiner alleges that Rangwalla discloses that the lacquer and ink are electron beam curable, but admits that Rangwalla does not disclose the claimed ink composition. *Id.* at 3. To remedy this latter deficiency, the Examiner relies upon Pennaz. *Id.* at 2. Pennaz is alleged to teach an electron beam curable ink composition for printing. *Id.* The Examiner argues that "it would have been obvious to a person of ordinary skill in the art to combine the ink composition taught by Pennaz with the invention of Rangwalla so as to provide a printed packaging material containing [an] ink composition having enhanced water stability and viscosity." *Id.* Applicant respectfully disagrees for at least the following reasons.

First, the Examiner has failed to establish that Rangwalla and Pennaz, alone or in combination, teach or suggest a product or a composition comprising an ink formulation and a lacquer "wherein at least a portion of said ink formulation and at least a portion of said lacquer are selected to permit at least some bonding to each other" as recited in, for example, claim 1 upon which the rejected claims 2-12 and 39-41 depend. Further, the Examiner has failed to establish that Rangwalla and Pennaz, alone or in combination, teach or suggest a product or a composition comprising an ink formulation and a lacquer layer "wherein at least a portion of said ink formulation and at least a

portion of said lacquer are bonded to each other” as recited in, for example, claim 13 upon which claims 15-19 and 42-43 depend.

Second, the Examiner has failed to provide any explicit reasoning to modify or combine the teachings of Rangwalla and Pennaz in an attempt to arrive at the presently-claimed invention. The Examiner alleges “[t]he motivation for combining Rangwalla and Pennaz is the need for the use of electron beam curable ink composition to be applied on a layered material.” *Id.* at 4. However, Applicant respectfully contends that a person of ordinary skill in the art would not look to the ink compositions disclosed in Pennaz to solve any alleged need to use electron beam-curable inks in layered materials such as those claimed. In that respect, the teachings of Pennaz are inapposite to Rangwalla.

Pennaz allegedly teaches a radiation-curable ink composition comprising ink, oligomers and/or monomers, and a water-reducible resin component. *See Pennaz* at col. 19, ll. 47-63. The alleged point of novelty in Pennaz appears to be the resin. The resin’s water solubility is a function of pH, and it is present in the ink composition in its unneutralized form to render the composition initially water insoluble. *Id.* However, upon change in pH, the resin is reduced and allows the ink to be washed away. *Id.* at col. 22, ll. 46-53. Thus, ink compositions taught in Pennaz have the property of being able to be removed as a function of pH of the water introduced to the ink composition. The water-reducible resin component is thus central to the teachings of Pennaz.

Contrary to the Examiner’s assertions, a person of ordinary skill in the art would not be motivated to specifically modify or combine Rangwalla with Pennaz. Nothing in Pennaz suggests that the ink compositions described could be used in a layered

material comprising a substrate, an ink layer and a lacquer, like that described in Rangwalla. In addition, Rangwalla does not describe a need for an ink composition having enhanced water stability and viscosity. Moreover, the skilled artisan would not look to the teachings disclosed in Pennaz to solve any alleged long-felt need for the use of EB-curable ink compositions on layered materials because of the very different nature of the respective inventions and problems described in Rangwalla and Pennaz. While Pennaz allegedly solves a problem commonly associated with water-insoluble ink compositions, Rangwalla is alleged to disclose a layered packaging material.

Additionally, the Examiner has failed to show that “there are a definite number of identified, predictable solutions, [and thus] a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.” *See KSR Int’l Co.*, slip op. at 17. Indeed, one of ordinary skill in the art would understand that there are an indefinite number of choices of EB-curable ink formulations disclosed in Pennaz. And without any guidance, it would not have been obvious to modify the teachings of Rangwalla with Pennaz in an attempt to arrive at the presently-claimed layered material necessarily exhibiting the claimed “bonding.”

Accordingly, for at least these reasons, the Examiner has failed to establish the requisite motivation to combine the references cited in the rejection of the present claims.

C. The Examiner Has Improperly Shifted the Burden of Production to the Applicant by Applying the Doctrine of Inherency to Allege That Which is Missing From the Claims

The Federal Circuit accepts that an Examiner may rely on the implicit and inherent disclosures of prior art references in a rejection of claims under 35 U.S.C. §

102 or 103. See, e.g., *In re Napier*, 55 F.3d 610 (Fed. Cir. 1995). However, when an Examiner relies on principles of inherency to support a prima facie case of obviousness, the burden is on the Examiner to initially produce evidence why the thing absent from the prior art is inherent. *In re Yates*, 211 U.S.P.Q. 1149, 1151 (C.C.P.A. 1981) (finding that when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, the PTO must produce supporting references).

The Board, for its part, has admitted that “[i]nherency and obviousness are sometimes like oil and water - they do not mix well.” *Ex parte Shricker*, 56 U.S.P.Q.2d 1723, 1725 (Bd. Pat. App. & Int. 2000). Although inherency may serve as the basis for an obviousness rejection, inherency and obviousness are distinct concepts. *In re Spormann*, 150 U.S.P.Q. 449, 452 (C.C.P.A. 1966) (“That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown”).

“A claim limitation is inherent in the prior art if it is necessarily present in the prior art, not probably or possibly present.” *Akamie Tech., Inc. v. Mass. Inst. of Tech.*, 68 U.S.P.Q.2d 1186, 1192 (Fed. Cir. 2003). Further, “[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient [to establish inherency.]” *In re Oelrich*, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981) (emphasis in original). Only when the Examiner presents evidence or rationale tending to show inherency does the burden shift to the Applicant to show an unobvious difference. *Ex parte Levy*, 17 U.S.P.Q.2d at 1464 (Board reversed where examiner did not provide objective evidence or cogent technical reasoning to support a conclusion of inherency); see also M.P.E.P. § 2112.

Moreover, regarding inherency, the courts have observed:

[W]hen the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.

Cont'l Can Co. USA, Inc. v. Monsanto Co., 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991) (emphasis added), citing *In re Oelrich*, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981).

As discussed below, Applicant respectfully contends that the Examiner has misapplied the doctrine of inherency and improperly shifted the burden of production to the Applicant.

1. The Examiner Has Failed to Produce Factual or Technical Evidence Demonstrating the Inherent Presence of “Bonding” Between the Ink Formulation and Lacquer of the Combined Prior Art References

Each independent claim (claims 1, 13, 20 and 38) on appeal requires at least some bonding between the ink formulation and the lacquer or the selection of a portion of each that permits at least some bonding between the two. Regarding these specific “bonding” claim limitations, the Examiner argues that “because neither Rangwalla nor Pennaz expressly discloses that the ink does not bond with lacquer, and both the ink and the lacquer are cured by the same method of curing, ***the ink inherently bonds with the lacquer.***” *Final Office Action* at 4 (emphasis added). Other than the Examiner’s unsupported statement, there is no evidence of this bonding. Assuming that Rangwalla and Pennaz are combinable, the references themselves provide no evidence of the alleged bonding and the Examiner fails to offer any other evidence. In fact, the Examiner contends that the Applicant must “provide factual evidence showing that there

is no bonding between the ink and the lacquer” even though the Examiner fails to establish a prima facie case at the outset. *Advisory Action* at 2.

By doing so, the Examiner has improperly shifted the burden of production to the Applicant by requiring the Applicant to prove that the combination of Rangwalla and Pennaz do not or would not inherently produce the bonding recited in the claims of the present application. In view of the complete absence of any evidence of inherency in the record, intrinsic or extrinsic, Applicant's invention is not obvious over Rangwalla in view of Pennaz. The Examiner has failed to establish a prima facie case of obviousness. Neither reference cited teaches or suggests to the skilled artisan all of the claim limitations. The Examiner has relied upon inherency to urge that the bonding limitations of the rejected claims are satisfied. As noted, however, there is no evidence supporting this inherency argument. Accordingly, the Examiner has not met his burden with respect to these assertions.

In order for the Examiner to rely on the doctrine of inherency, he must “provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied art.” *Ex parte Levy*, 17 U.S.P.Q.2d at 1424 (emphasis in original). When the rejection is an obviousness rejection under 35 U.S.C. § 103, the burden is even more onerous. “[W]hen an examiner relies on inherency, it is incumbent on the examiner to point to the ‘page and line’ of the prior art which justifies the inherency theory.” *Ex parte Schricker*, 56 U.S.P.Q.2d at 1725 (vacating an obviousness rejection, which had merely stated the claimed effect would be inherent in the combination of the prior art references). The Office must cite facts in support of a Section 103 rejection and not the Office's opinion.

In re Zurko, 258 F.3d 1379, 1386 (Fed. Cir. 2001) ("With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or expertise . . . Rather, the Board must point to some concrete evidence in the record in support of these findings").

The Examiner in the present case, like the Examiner in *Schricker*, has failed to explain the basis for the finding of inherency. In the present case, the Examiner has provided no factual or technical evidence, just a conclusory statement that "because neither Rangwalla nor Pennaz expressly discloses that the ink does not bond with the lacquer, and both the ink and the lacquer are cured by the same method of curing, the ink inherently bonds with the lacquer." *Final Office Action* at 4. However, a conclusion based on the "absence of evidence" does not provide the rational evidentiary basis necessary to support a rejection based on inherency under Section 103. *See KSR Int'l, supra*.

In the present case, the Examiner has improperly shifted the burden to the Applicant by urging the Applicant to "provide factual evidence showing that there is not bonding between the ink and lacquer layer," *Advisory Action* at 2, despite that the Examiner has done no more than merely suggest that bonding between the lacquer and ink compositions of Rangwalla and Pennaz, respectively, is possible because "both the ink and the lacquer are cured by the same method." *Final Office Action* at 4. However, the Examiner's postulation amounts to no more than mere speculation about bonding, and does not qualify as evidence of such. Contrary to the Examiner's contentions, Applicant is not under any duty to present evidence to the contrary until the Examiner has provided a valid, factual assertion that the recited ink formulation and lacquer would

necessarily and always result in bonding between the two when cured. *See Akamie Tech, Inc., supra.*

The Federal Circuit has recently addressed the issue of inherency in *Crown Operations Int'l Ltd. v. Solutia Inc.*, 289 F.3d 1367 (Fed. Cir. 2002). The claim at issue in *Crown* concerned a solar/safety film for use in a laminated window assembly comprising a specified set of layers, where one layer had a specific property; it contributed no more than 2% visible reflectance to the final product. *Id.* at 1372. *Crown* cited a reference as prior art, which disclosed the same layer structure, the same layer thicknesses, and the same layer materials. *Id.* *Crown* argued that the reference “merely claims a preexisting property inherent in the structure disclosed in the prior art” and asked the Court “to accept the proposition that if a prior art reference discloses the same structure as claimed by a patent, the resulting property ... should be assumed.” *Id.* at 1377.

The Federal Circuit resoundingly disagreed with *Crown's* argument, affirming the district court's ruling that no evidence had been presented by *Crown* to show that “[the 2% reflectance limitation] must be necessarily present and a person of ordinary skill in the art would recognize its presence. . . . The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.*

The Examiner's argument here is similar to the one made and rejected by the Court in *Crown*. In *Crown*, the anticipatory prior-art reference taught the same laminated structure with the same thickness and composition for each layer. The combined teachings of Rangwalla and Pennaz in the present case have been asserted to disclose, among other things, a layered composition comprising an ink formulation

and lacquer. Like the facts in *Crown*, an allegation has been made in the present case that a claim limitation is inherent to the recited structure. And like *Crown*, in the present case no evidence has been provided that the missing claimed "bonding" limitation is "necessarily present and a person of ordinary skill in the art would recognize its presence." *Id.* Assuming, arguendo, that Rangwalla and Pennaz are combinable, there exists at best a *mere possibility* that one of ordinary skill in the art looking at the collective teachings would select at least one monomer-containing lacquer and at least one monomer-containing ink formulation to permit at least some bonding to each other. See, e.g., *In re Oelrich*, *supra*.

2. Cases Authorizing Burden Shifting Do Not Apply to the Present Facts

Where Examiners cannot readily determine whether a difference exists between the subject matter of a given claim and particular prior art references, and "the claimed and prior art products are identical or substantially identical, the USPTO can require an applicant to prove that the prior art product does not necessarily or inherently possess the characteristics of the claimed product." *Ex parte Crish*, 2004 U.S. App. LEXIS 26518, *10 (Bd. Pat App. & Inter. 2003); see also *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) (finding the burden of proof is properly shifted to the Applicant when the PTO shows a sound basis for concluding the products of the Applicant and the prior art are the same). However, to shift the burden of proof, the examiner "must first make factual findings which support the conclusion that the claimed and prior art products are prima facie 'identical or substantially identical.'" *Id.*, quoting *In re Best*, 562 F.2d 1252, 1255

(C.C.P.A. 1977). “That determination must be made case-by-case based upon the facts of the individual case.” *Id.*

These cases are easily distinguishable from the present facts. *Crish* and *Spada* both stand for the proposition that when the PTO shows a sound basis for believing the products of the applicant and the prior art **are the same** (in a 35 U.S.C. § 102(b) sense), the burden is shifted to the Applicant to show that they are not the same. *Spada*, 911 F.2d at 708 (finding a lack of novelty after the Board held the claimed compositions “appear to be identical” to those claimed in the prior art); *Crish*, 2004 U.S. App. at *10 (ruling that the prior products prima facie were “identical or substantially identical” after the examiner made factual findings supporting this conclusion). In other words, this burden shifting may be authorized in a 35 U.S.C. § 102 context. However, in the present case, the Examiner has not alleged that any of the present claims are anticipated under 35 U.S.C. § 102(b). Indeed, they are not. Moreover, the Examiner has not asserted that the cited references disclose a product that is “the same” as or “substantially identical” to the compositions or products of the present claims. Rather, the Examiner has admitted that the products of the prior art and the present claims are not identical; by issuing a rejection under § 103(a) over a *combination* of references and by admitting that “Rangwalla does not disclose the claimed ink composition.”

D. Conclusion

The Examiner’s alleged prima facie rejection under 35 U.S.C. § 103(a) is not supported by the record. As discussed above, there is no evidence that “bonding” exists or would necessarily and always occur between the ink formulation and lacquer of the asserted combination of Rangwalla and Pennaz. The Examiner has cited

references that arguably, separately teach various components of the claimed invention, but they clearly fail to disclose the “bonding” limitations claimed by the Applicant.

In essence, the Examiner improperly used the present invention as a “blue print” for piecing together elements from the individual references. The reverse logic used by the Examiner, namely that because neither of the prior art references “expressly discloses that the ink does not bond with the lacquer and both the ink and the lacquer are cured by the same method of curing, that the ink therefore inherently bonds with the lacquer” is improper and does not constitute evidence of anything. *See Final Office Action, supra*. The Examiner has cobbled together separate elements from the cited references and relies, albeit improperly, on the doctrine of inherency to fill in the gaps. The Examiner has failed to provide factual evidence or technical reasoning to support his inherency assertion. In the wake of this evidentiary void, the Examiner has improperly shifted the burden to the Applicant to prove that the alleged inherent bonding limitations are not present in the combined teachings of the prior art.

Accordingly, for the reasons set forth above, Applicant maintains that a *prima facie* case of obviousness has not been established based on the cited references. The Examiner has failed to demonstrate or provide intrinsic or extrinsic evidence that the combination of the references cited would always result in the compositions as claimed. Thus, Applicant respectfully requests reversal of the rejection of claims 1-13, 15-26 and 38-43 under 35 U.S.C. § 103(a), and the prompt allowance of this application.

To the extent any extension of time under 37 C.F.R. § 1.136 not requested herewith is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due which are not enclosed herewith,

including any fees required for an extension of time under 37 C.F.R. § 1.136, please
charge such fees to Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: June 11, 2007

By: 

Mike McGurk
Reg. No. 32,045

VIII. Claims Appendix

1. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols, wherein at least a portion of said ink formulation and at least a portion of said lacquer are selected to permit at least some bonding to each other.

2. The layered material according to claim 1, wherein the acrylate ester in the ink formulation and/or lacquer is a multifunctional acrylate ester selected from acrylated polyols having a molecular weight ranging from 150 to 600; polyester acrylates having a molecular weight ranging from 1000 to 2000; polyether acrylates having a molecular weight ranging from 200 to 1500; polyester urethane acrylates having a molecular weight ranging from 400 to 2000; polyurea acrylates having a molecular weight ranging from 400 to 2000; and epoxy acrylates having a molecular weight ranging from 300 to 1000.

3. The layered material according to claim 1, wherein the acrylate ester in the ink formulation and/or lacquer is a multifunctional acrylate ester selected from pentaerythritol tetraacrylate, ditrimethylolpropane tetraacrylate, trimethylolpropane triacrylate, glycerol triacrylate, triacrylate ester of tris(2-hydroxy-ethyl)isocyanurate,

hexanediol diacrylate, dipentaerythritol hexacrylate, and ethoxylated and propoxylated derivatives thereof.

4. The layered material according to claim 1, wherein the substrate comprises at least one polymer selected from polyolefins, polyolefin copolymers, polystyrene, polyesters, polyamides, polyimides, polyacrylonitrile, polyvinylchloride, polyvinyl dichloride, polyvinylidene chloride, polyacrylates, ionomers, polysaccharides, silicones, natural rubbers, and synthetic rubbers.

5. The layered material according to claim 1, wherein the lacquer has a normalized thickness ranging from 0.5 g/m² to 20 g/m².

6. The layered material according to claim 1, wherein the lacquer coats a portion of the ink formulation.

7. The layered material according to claim 1, wherein the lacquer coats the ink formulation.

8. The layered material according to claim 1, wherein the lacquer coats the ink formulation and the substrate surface.

9. The layered material according to claim 8, further comprising a second substrate positioned on the lacquer.

10. The layered material according to claim 1, wherein the ink formulation and lacquer are curable by exposure to highly accelerated particles generated by a particle beam processing device operating at a voltage in a range of 125 kVolts or less.

11. The layered material according to claim 10, wherein the ink formulation and lacquer is curable by exposure to highly accelerated particles generated by a particle beam processing device operating at a voltage in a range of 110 kVolts or less.

12. The layered material according to claim 11, wherein the highly accelerated particles emit energy ranging from 0.5 Mrads to 10 Mrads.

13. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one polymer derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one polymer derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols, wherein at least a portion of said ink formulation and at least a portion of said lacquer are bonded to each other.

14. (Cancelled).

15. The layered material according to claim 13, wherein at least a portion of the ink formulation is chemically bonded to at least a portion of the lacquer.

16. The layered material according to claim 13, wherein the lacquer coats a portion of the ink formulation.

17. The layered material according to claim 13, wherein the lacquer coats the ink formulation.

18. The layered material according to claim 13, wherein the lacquer coats the ink formulation and the substrate surface.

19. A package comprising the material according to claim 13.

20. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one first polymer; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one second polymer, wherein at least a portion of the at least one first polymer is bonded to at least a portion of the at least one second polymer.

21. The layered material according to claim 20, wherein the at least one first polymer is chemically bonded to the at least one second polymer.

22. The layered material according to claim 21, wherein the at least one first polymer is covalently bonded to at least a portion of the at least one second polymer.

23. The layered material according to claim 20, wherein the at least one first polymer is crosslinked to at least a portion of the at least one second polymer.

24. The layered material according to claim 20, wherein the at least one first polymer and the at least one second polymer comprise an interpenetrating network.

25. The layered material according to claim 20, wherein the at least one first and second polymers are independently derived from at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides.

26. A package comprising the layered material according to claim 20.

27. (Withdrawn). A method for making a layered material, comprising:

providing a substrate;

applying an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols; and

applying at least a portion of the ink formulation with a lacquer, the lacquer comprising at least one monomer selected from acrylate esters, vinyl ethers, cycloaliphatic diepoxides, and polyols.

28. (Withdrawn). The method according to claim 27, further comprising exposing the ink formulation and lacquer to highly accelerated particles generated by a particle beam processing device operating at a voltage of 125 kVolts or less.

29. (Withdrawn). The method according to claim 28, further comprising exposing the ink formulation and lacquer to highly accelerated particles generated by a particle beam processing device operating at a voltage of 110 kVolts or less.

30. (Withdrawn). The method according to claim 27, wherein the highly accelerated particles emit energy ranging from 0.5 Mrads to 10 Mrads.

31. (Withdrawn). The method according to claim 27, wherein the highly accelerated particles cause polymerization of the monomers in the ink formulation and the lacquer.

32. (Withdrawn). The method according to claim 31, wherein the polymerization is a free radical polymerization.

33. (Withdrawn). The method according to claim 32, wherein the lacquer and ink formulation comprise monomers selected from acrylate esters.

34. (Withdrawn). The method according to claim 31, wherein polymerization is a cationic polymerization.

35. (Withdrawn). The method according to claim 34, wherein the lacquer and ink formulation comprise monomers selected from cycloaliphatic diepoxide and polyols.

36. (Withdrawn). The method according to claim 27, the ink formulation is applied by at least one method selected from flexography printing, rotor-gravure printing, offset lithography printing, and spray printing.

37. (Withdrawn). The method according to claim 27, wherein the lacquer is applied by at least one method selected from a roll coating application, an offset gravure application, and a direct gravure application.

38. A layered material, comprising:

a substrate;

an ink formulation on at least a portion of the substrate, the ink formulation comprising ink and at least one monomer curable by free radical and/or cationic polymerization; and

a lacquer on at least a portion of the ink formulation, the lacquer comprising at least one monomer curable by free radical and/or cationic polymerization, wherein at least a portion of the ink formulation and at least a portion of the lacquer are selected to permit at least some bonding to each other.

39. The layered material of claim 1, wherein the bonding is chemical bonding.

40. The layered material of claim 39, wherein the chemical bonding is covalent.

41. The layered material of claim 39, wherein the chemical bonding is cross-linking.

42. The layered material of claim 15, wherein said chemical bonding is covalent.

43. The layered material of claim 15, wherein said chemical bonding is cross-linking.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.